CAVE CREEK
FCD GAGE ID# 4893

STATION DESCRIPTION

LOCATION – The gage site is located about 1/2 mile southwest of the town hall for the town of Cave Creek. Latitude N33° 49' 48", Longitude W111° 58' 3.6". Located in S29 T6N R4E, in the Cave Creek 7.5-minute quadrangle.

ESTABLISHMENT – Gaging by the District established on May 28, 2003.

DRAINAGE AREA – approximately 100 mi^2

GAGE – The gage is a gas bubbler type instrument. The bubbler orifice is at elevation 0.25 feet gage height, levels of June 21, 2010.

There are no staff gages at this location.

There are no crest-stage gages at this location.

ZERO GAGE HEIGHT – Zero gage height is the bottom of the notch cut into the road crossing at the orifice. Elevation 1,989.89 feet NAVD 1988, levels of August 11, 2003.

HISTORY – No previous history at this location. Initial site selection occurred in August 2002. Preliminary work done in April 2003. Gaging established May 28, 2003. FCD brass cap placed on July 17, 2003. Survey of five cross sections at and below gage done August 11, 2003. Orifice line destroyed during event of February 12, 2005. Repaired in March 2005. Station housing submerged in event of September 3, 2005. Gas/Purge system rendered unworkable. Pressure transducer installed for a temporary fix as of September 8, 2005. New device setup installed on May 3, 2006 to replace the transducer. The ID changed to 4889. Electronics setup changed and ID changed to 4893 on September 11, 2008. The orifice line was destroyed during the January 21, 2010 event. A pressure transducer was installed June 16, 2010.

REFERENCE MARKS –

RM-CVCRK is an FCD brass tablet located about 100 feet east of the road crossing. The monument is placed on the south side of the road in the last turnout before crossing the road. Elevation 7.97 feet gage height, or 1,996.86 feet NAVD 1988, levels of August 11, 2003. The reference monument was not found during the April 20, 2010 survey and is presumed destroyed on account of grading near the site.

CHANNEL & CONTROL – The channel at the gage is a concave concrete road crossing with a 1-foot square notch cut into the center low point. Small flows pass in through the notch, approximately 2 cfs. Above about 1 foot gage height, flow spreads in the road crossing. No good control exists until the channel begins to be the control. Upstream of the road crossing the channel is cobble with heavy vegetation on both banks. Downstream of the road crossing, the channel contains many cobbles with somewhat less vegetation, though still significant. Small to moderate flows would not appear to cause much movement in the channel. A large bankfull flow in September 2005 caused negligible change in the channel

RATING – The current rating is Rating #2. It is a modification of rating #1 for flows above 6,000 cfs. The previous rating did not properly represent higher flows. An indirect measurement for a flow at 9.7 feet gage height was used to redraw the rating curve. Rating #1 was developed from a direct measurement of flows in the notch, hand computations of the Manning equation for low flows out of the notch, and HEC-RAS model for flows above about 200 cfs.

DISCHARGE MEASUREMENTS – Direct measurements can be made at the road crossing. Indirect measurements can be made in a reach downstream from the gage.

POINT OF ZERO FLOW – 0.00 feet gage height, inside the notch at the orifice.

FLOODS – An event of 11,400 cfs and 9.7 feet gage height occurred on September 3, 2005. A larger event occurred on January 21, 2010 of 18,680 cfs and 12.1 feet gage height.

REGULATION – No known regulation

DIVERSIONS – No known diversions

ACCURACY – Fair - accuracy will improve as discharge measurements are done.

JUSTIFICATION – Monitor flows in the creek to determine quantity of flow past this point for the town of Cave Creek.

UPDATE - July 13, 2011
D E Gardner